

Small Spacecraft Integrated Power System with Active Thermal Control

Completed Technology Project (2015 - 2017)



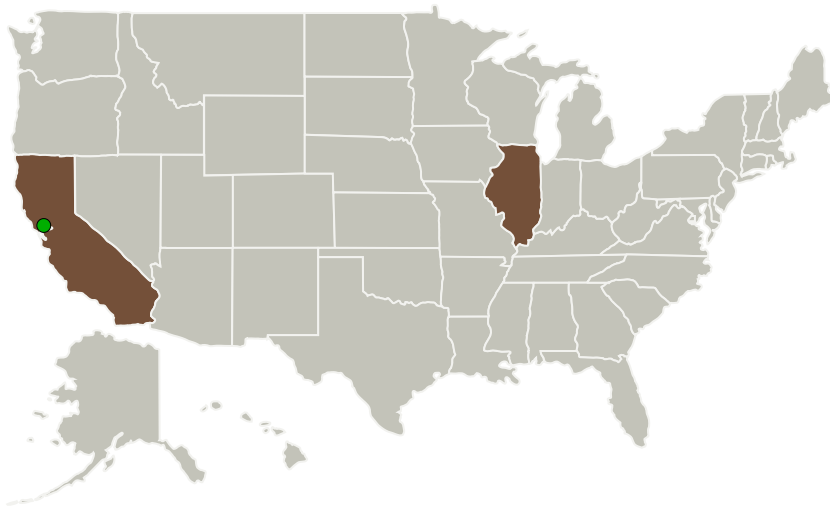
Project Introduction

This project will develop an integrated power generation and energy storage system with an active thermal management system. Carbon fiber solar panels will contain microvascular fluid channels, and provide battery cooling and a cold plate for other satellite devices. The system is scalable from 6U CubeSats up to 100 kg small satellites.

Anticipated Benefits

This project will significantly increase the capabilities of deep space CubeSats, allowing more powerful and hotter spacecraft systems than are currently available with state of the art commercial systems. This new system will fulfill the needs of upcoming NASA cislunar missions and beyond.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
University of Illinois at Urbana-Champaign	Lead Organization	Academia	Urbana, Illinois
● Ames Research Center(ARC)	Supporting Organization	NASA Center	Moffett Field, California



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Primary U.S. Work Locations

California

Illinois

Project Transitions



October 2015: Project Start



December 2017: Closed out

Closeout Summary: Planned CubeSat test on ISS Nanoracks 8/2018

Project Website:

<https://www.nasa.gov/directorates/spacetech/home/index.html>

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

University of Illinois at Urbana-Champaign

Responsible Program:

Small Spacecraft Technology

Project Management

Program Director:

Christopher E Baker

Program Manager:

Roger Hunter

Principal Investigator:

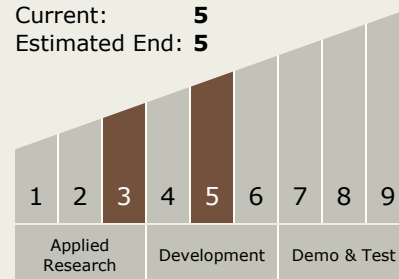
Alexander R Ghosh

Technology Maturity (TRL)

Start: 3

Current: 5

Estimated End: 5



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Target Destinations

Earth, The Moon